HINDUSTAN INSTITUTE OF ALLIED HEALTH SCIENCES

Regulations and Syllabus

COURSE NAME : B.Sc Physician Assistant

Duration : 3 years

Detailed Syllabus for the 3 year degree course

First year

First Semester (I semester)

S.No	Subject code	Subject	Units
1.	BPA101	Human Anatomy	4
2.	BPA102	Human Physiology	4
3.	BPA103	Biochemistry	4
4.	BPA104	Introduction to computers	4
5.	BPA105	Communicative English	4
		Training in lab procedures (lab rotation)	

First year- Second Semester (II semester)

S.No	Subject code	Subject	Unit
6.	BPA106	General Pathology	4
7.	BPA107	Nutrition and Dietetics	4
8.	BPA108	Medical & Surgical Equipments	4
9.	BPA109	Technical writing skills	4
10.	BPA110	Clinical Psychology	3

		Training in Hospital procedures – Rotation in various departments	

Second year – First semester (III semester)

S.No	Subject code	Subject	Unit
1.	BPA201	General Pharmacology - I	4
2.	BPA202	Environmental studies	4
3.	BPA203	Paediatrics	4
4.	BPA204	Clinical Microbiology	4
5.	BPA205	Obstetrics and Gynaecology	4
		Training in Clinical Department – Rotational basis	

Second year – Second semester (IV semester)

S.NO	Subject code	Subject	Unit
6.	BPA206	General Pharmacology – II	3
7.	BPA207	Hospital Infn.control practices	4
8.	BPA208	Geriatrics	2
9.	BPA209	Cardiology and Cardiac surgery	4
10.	BPA210	Pulmonology	2

		Training in Clinical Department on Rotational basis	

Third year – First semester (V semester)

S.No	Subject code	Subject	Unit
1.	BPA301	Neurology	4
2.	BPA302	Nephrology	3
3.	BPA303	Orthopaedics	3
4.	BPA304	Gastro-enterology	2
		Training in Clinical Departments on Rotational basis	

Third year – Second semester (VI semester)

Clinical postings on Rotational basis in Single / Multi speciality hospital

DETAILED SYLLABUS :

First Year- First semester

1. **Human Anatomy**
2. **Human Physiology**
3. **Biochemistry**
4. **Introduction to computers**
5. **Communicative English**

BPA101 Subject 1 : Human Anatomy

Unit 1

Introduction to Human Anatomy, Definitions, planes of the body, organ system

Tissues of the body, epithelium, connective tissue, bone and cartilage

Types of cells and their arrangement, Various systems of the body and their functions in brief

Unit 2

Skeletal system – Different bones in the body, skull bones, other bones and body joints

Muscular system – Different types of muscles, origin, insertion, functions and nerve supply

Skin and Appendages, Sense organs anatomy

Respiratory system – Nose, trachea, bronchi, lungs, diaphragm

Unit 3

Nervous system – parts of the nervous system, blood brain barrier, reflex arc, cranial, spinal and peripheral nerves, autonomic nervous system

Brain : parts, protective coverings, cerebrospinal fluid, brain stem, diencephalon, cerebellum, medulla oblongata

Endocrine system – Major endocrine glands in the body-structure

Unit 4

Cardiovascular system – Heart, blood and blood vessels

Digestive system – parts of the digestive system – mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus

Excretory system – Kidneys, ureters, urinary bladder, urethra (male and female)

Reproductive system – male and female reproductive organs

BPA102 Subject 2 – Human Physiology

Unit 1

Introduction to physiology – Cell structure, body fluid compartments, Homeostasis, transport across cell membrane, neuro muscular junction and muscle contraction

Blood – composition and function of blood, erythropoiesis, anaemia, polycythemia

Blood coagulation, plasma proteins, blood groups including Rh

Cardiovascular system – conduction of heart beat, cardiac cycle, ECG, cardiac output, arterial blood pressure measurement, heart rate

Unit 2

Respiration – Mechanism, lung volume and capacities, transport of oxygen and carbon di oxide, regulation of respiration, artificial respiration

Digestive system – secretions and functions of salivary glands, gastric glands, pancreas, small intestine, absorption, liver function

Excretory system – formation of urine, micturition, normal and abnormal constituents of urine

Unit 3

Endocrine system – Major Endocrine glands, hypothalamic – pituitary – target gland axis, regulation.

Reproductive system – male and female sex hormones, spermatogenesis, menstrual cycle

Integumentary system – functions of skin

Unit 4

Nervous system – nerve impulse conduction, synapse, receptors, reflex action, ascending and descending tracts, functions of cerebral cortex, basal ganglia, thalamus, hypothalamus, brain stem, sleep and reticular formation

Special senses – olfaction, gestation, hearing and vision – pathways and applied aspects

BPA103 Subject 3 – Biochemistry

Unit – 1

Carbohydrates – Glucose, fructose, galactose, lactose, sucrose, starch and glycogen – properties, structure and function

Proteins – aminoacids, peptides – properties and tests with a few examples

Unit – 2

Lipids – fatty acids, saturated and unsaturated, cholesterol, phospholipids and plasma membrane, glycerol

Enzymes – definition, classification, factors affecting enzyme activity, coenzyme, enzyme inhibition, units of enzyme, isoenzyme and enzyme pattern in disease

Unit – 3

Vitamins – Fat and water soluble vitamins – requirements and properties

Minerals – Na, K, Ca, P, Fe, Cu and Se – requirement, availability and property

Hormones – receptor concept – insulin, glucagon and thyroxin

Metabolism in short – carbohydrate, protein and lipids

Unit – 4

Role of biochemistry in diagnosis of diseases, inborn errors of metabolism, disorders of kidney and liver (diagnostic tests), coagulation disorders, disorders of calcium and phosphorous metabolism, endocrine disorders

Biochemical tests, their interpretation, radioactive isotopes in diagnosis, urine analysis

BPA104 Subject 4 – Introduction to Computer

Unit – 1

Introduction to computer – I/O devices – memories – RAM & ROM – different kinds of ROM – kilobytes, MB, GB their conversions – large computer – Medium, Micro, Mini computers – different computer languages – number system – binary and decimal conversions – different operating system – MS DOS – basic commands – MD, CD, DIR, Type and COPY CON commands – Networking – LAN, WAN, MAN (only basics)

Unit – 2

Typing text in MS word – manipulating text – formatting the text – using different font sizes, bold, italics – Bullet and numbering – pictures, file insertion – aligning the text and justify – choosing paper size – adjusting margins – header and footer, inserting page numbers in a document – printing a file with options – using spell check and grammar – find and replace – mail merge – inserting tables in a document

Unit – 3

Creating table in MS – Excel – cell editing – using formulas and functions – manipulating data with excel – using sort function to sort numbers and alphabets – drawing graphs and charts using data in excel – auto formatting – inserting data from other worksheets

Preparing new slides using MS Power point – inserting slides – slide transition and animation – using templates – different text and font sizes – slides with sounds – inserting clip arts, pictures, tables and graphs – presentation using wizards

Unit – 4

Introduction to Internet – using search engine – Google search – Exploring the text

Explorer and Navigator – uploading and downloading of files and images

E mail id creation – sending messages – attaching files in E mail

BPA105 Subject 5 – Communicative English

Unit – 1

Reading Comprehension – Exercises on Comprehension, Practical Exercise - Formal speech, Phonetics, semantics

Basics of Grammar – Vocabulary - Synonyms, Antonyms, Prefix and Suffix, Homonyms, Analogies and Portmanteau words.

Unit - 2

Basics of Grammar – Active, Passive, Direct and Indirect speech, Prepositions, Conjunctions and Euphemisms.

Unit - 3

Writing Skills - Letter Writing, writing paragraphs, Formal letters, Summary writing, Case report writing

Unit – 4

Speaking skills – Formal and informal conversations, telephone etiquette, interview, interaction with patients and attendants

First Year – Second semester

6. **General Pathology**
7. **Nutrition and Dietetics**
8. **Medical Equipments**
9. **Technical writing skills**
10. **Clinical Psychology**

BPA106 Subject – 6 – General Pathology

Unit – 1

Cell injury – Causes of Cell injury, Morphology of cell injury, Cell death – Cell death – Necrosis, Types of necrosis, Mechanisms of cell death, apoptosis, Morphology of apoptosis, Mechanisms of apoptosis

Cellular Adaptation – various types of cellular adaptation, intracellular accumulation, pathologic calcification, cellular aging, senescence

Cell death – Necrosis, Types of necrosis, Apoptosis,
programmed cell death

Unit 2

Inflammation, Types of inflammation, the acute inflammatory reaction – changes in acute inflammation, changes in the calibreof blood vessels, changes in blood flow, exudation, types ofexudates, Local sequelae of acute inflammation, the chemical mediators of acute Inflammation and Repair, Role of mast cells,
Role of platelets in inflammation, Chronic inflammation – cause,
classification, general feature.

Unit 3

Terms associated with growth- aplasia, metaplasia, dysplasia, neoplasia – types of neoplasia, hyperplasia, hypoplasis, atrophy, hypertrophy, hypotrophy, Circulatory disturbances – thrombosis, infarction, ischemia,hypoxia, embolism, Degeneration (calcification).

Neoplasia – Clinical features of malignancy, characteristics of Neoplasm

Unit – 4

Atherosclerosis and other Vascular Diseases
Categories of vascular disease, Arteriosclerosis, Atherosclerosis, Theories of Pathogenesis, major risk factors , complications

Aneurysms – Types, Vasculitis – Examples

Diseases of the cardiovascular system and Ischemic Heart Disease, myocardial infarction, congestive heart failure

BPA107 Subject – 7 – Nutrition and Dietitics

Unit – 1

Introduction – History of Nutrition – Nutrition as science – Food groups, RDA, Balanced Diet, Diet planning – Assessment of Nutritional status – Units of energy – Measurement and Energy – value of food – Energy expenditure – Total energy / Calorie requirement for different age groups and disease – Satiety value – Energy imbalance – obesity – Limitations of daily food guide

Unit – 2

Proteins – sources and functions – Essential and non essential amino acids – Incomplete and complete proteins – Supplementary foods - Nitrogen balance – Changes in protein requirement

Unit – 3

Fats – Functions and sources – Essential fatty acids – Excess and deficiency – Lipids and eye – Hyper lipidemia, Heart disease, Atherosclerosis

Minerals – General Functions and Sources – Macro and Micro minerals - Deficienceies and excess – complications Eg : Iron, Calcium, Iodine etc

Unit – 4

Vitamins – general functions – Food sources – Vitamin deficiencies and associated eye disporders with particular emphasis on Vitamin A – Promoting sound habits in pregnancy, lactation and infancy – Nutrients with anti oxidant – Properties – low birth weight

BPA108 Subject 8 – Medical & Surgical Equipments

Unit 1

Examination tables, Exam lights, ECG (electrocardiogram) machines, Scales: Used to measure (usually manually) a patient's weight and height, Hemoglobin machines- a machine used to test a small sampling of blood for the amount of haemoglobin (protein in red blood cells) in a patient's blood, Autoclave - A small pressure chamber used to sterilize medical office equipment and tools after use, Stethoscope, Blood pressure meter (sphygmomanometers): A cuff and air pressure pump that increases a patient's blood pressure in order to measure

Unit 2

Common tools used by a physician and his assistant

Syringes, Vaccines, Biohazard Sharps Containers (for bio-hazardous waste removal), Exam gowns, Cotton balls and swabs, Suturing materials, Masks and gloves, Sterilizing solution, Glucometers, Thermometers, Otoscopes, Tongue depressors, Penlights, Ear scopes, Surgical instruments (scalpels, forceps, hemostats and needle holder

Unit 3

Surgical equipments - History of surgery, role of surgeon, importance of team work, stresses arising during operative procedure, surgical terminology, types of incision equipments and their indications, Tourniquets – use and duration of application and dangers of use

Sutures and surgical instruments

Unit 4

Common equipments in anaesthesiology, Personal cleanliness and aseptic techniques/ dressing techniques / wound care

Pre –operative and postoperative care of the surgical patient

Emergency procedure – endotracheal intubation, tracheostomy, Cental line placement, IV cannulation, Ambu bag ventilation, CPR, Basic life support

BPA109 Subject – 9 Technical writing skills

Unit 1

Definition, basic principle, properties and role of technical writing
Information structure and techniques, distinction between technical and literary writing
Descripting mechanism, process description, classification, cause and effect, comparison and contrast and analogy

Unit 2

Styles in technical writing, types of technical report: - report layout, formal report format, memorandum report, letter report.
Bulletins, abstract, proposal, research report, feasibility study
Business letter: - definition, purpose, elements, characteristics, format, styles & types

Unit 3

Guidelines in technical writing , writing process from audience to rough draft, audience analysis , task analysis , power – revision techniques, libraries.
Documentation, cross-referencing, basic patterns and elements of the sentence,

Unit 4

Graphic aids:- Bar chart, line chart, table, circle or Pie chart, surface or strata chart, map charts, flow charts, flow sheets, diagrams , figures, photographs , drawings, important points in handling graphics

Contemporary communication: E- mail, Internet, Desktop publishing, hypertext

BPA110 Subject – 10 Clinical Psychology

Unit 1

Introduction to Psychology

A – Definition, History, Branches, Scope and current status

B – Methods, Concepts of normality and abnormality

Sensation, Attention and Perception

Primary senses – Types of attention and determinants – Principles of perception and determinants

Unit 2

A – intelligence, B-learning, C- Memory, D- Personality, E – Motivation and F- Body image and personality integration

Helper – Helpee relationship and counselling

Characteristics of therapist, Relationship between therapist and client, counselling patients with disability, breaking bad news

Unit 3

Psychological Reaction

A- Illness, loss and Grief

B – Adapting changes in Vision (age, diseases, etc.,)

Tests for people with disability WAIS – R, WISC – R

Disability and Rehabilitation

Second year – First semester (III semester)

1. **Pharmacology - I**
2. **Environmental studies**
3. **Paediatrics**
4. **Clinical Microbiology**
5. **Obstetrics and Gynaecology**

BPA201 Subject – 1 Pharmacology – I

Unit 1

General concepts of pharmacology – Basic concepts of drugs, common characteristics of drugs, drug forms, drug components, sources of drugs, clinical trials of drugs, drug interactions, legal terms referring to drugs, routes of drug administration, Drug processing in the body (pharmacokinetics and pharmaco dynamics) Distribution, Metabolism, Excretion

Unit 2

Divisions of nervous system, Drugs affecting the parasympathetic nervous system-cholinergic drugs, drugs affecting the sympathetic nervous system – adrenergic drugs

Drugs affecting the cardio vascular system – Cardiac glycosides, Anti anginals, Anti hypertensives

Unit 3

Drugs affecting the Respiratory system – Cough, Bronchial Asthma

Drugs affecting the digestive system – ulcers, emetics, anti-emetics and pro kinetic agents, purgatives, Diarrhoea, Drugs used in other Intestinal Diseases

Drugs affecting the excretory system – Diuretics

Unit 4

Anti allergic drugs – Anti allergic drugs – common allergens, causes of allergic reactions, Symptoms of allergic reaction, Diagnosis of allergic reaction, Anti-allergic drugs for the treatment of allergy.

BPA202 Subject 2 – Environmental studies

Syllabus to be included

BPA203 Subject – 3 Paediatrics

Unit 1

Definition, population, morbidity and mortality in children, maternal, perinatal, neonatal, infant and preschool mortality rates, current national programmes like ICDS, RCH, Vitamin A prophylaxis, UIP, IMCI, Pulse polio, AFP, ARI, Diarrhoea control programmes

Unit 2

Growth and development – anthropometry – Measurement and interpretation o0f weight, length / height, head circumference, mid-arm circumference. Use of weighing machines, infant meter, interpretation of growth charts, failure to thrive, shortstature, growth pattern of different organ systems like lymphoid, brain and sex organs, normal pattern of teeth eruption

Important milestones in infancy and early childhood in areas of gross motor, fine motor, language and personal – social development, psychological and behavioural problems

Measurement and interpretation of sitting height, US : LS ration and arm span

Age – independent anthropometric measurement – principles and application

Unit 3

Immunization – National immunization programmes, vaccine preservation and cold chain

Vaccination types, contents, efficacy, storage, dose, site, route, contraindications and adverse reactions – BCG, DPT, OPV, Measles, MMR and Typhoid

Pulse polio immunization, AFP (Acute flaccid paralysis) surveillance

Special vaccines – Hepatitis B, H influenza B, Pneumocoocal, Hepatitis A, Chicken pox, meningococcal and Rabies.

Special reference to vaccine – preventable disease – Diarrhoea, LRTI, TB, Polio, meningitis, diphtheria, whooping cough, tetanus, measles, mumps, rubella, typhoid, viral hepatitis, cholera, chicken pox, giardisis, amoebiasis, intestinal helminthiasis, malaria, dengue fever, AIDS, Kala azar, leprosy, Chlamydia infection

Unit 4

Paediatric emergencies – status epilepticus, status asthmaticus / acute severe asthma, shock and anaphylaxis, burns, hypertensive emergencies, gastro intestinal bleed, comatose child, congestive cardiac failure, acute renal failure

Genetics – principles of inheritance and diagnosis of genetic disorders – Down's syndrome

BPA204 Subject – 4 Microbiology

Unit 1

Bacteriology – Structure of Bacteria – Cell structure, Surface structures, Surface appendages, surface layers, Intra cellular components, Classification of Bacteria, Metabolism of Bacteria, Normal flora and Bacterial pathogenesis, Bacteria and chemotherapy

Unit 2

Virology – Structure, Classification of viruses, Multiplication of viruses, Nomenclature, Viral Genetics and pathogenesis – Genetic change in viruses, Pathogenesis of viral infection

Immune defences – Anatomic Barriers, non specific inhibitors, phagocytosis, fever, inflammation, viral interference and interferons, viral activation of immunity, Humoral immunity, Cell-mediated immunity, Prophylaxis – Active and Passive, Chemotherapy.

Unit 3

Mycology – General concepts of Mycology – classification of fungus, clinical classification of mycoses – Superficial, Deep, Oppurtunistic

Structure of fungi and Diseases Mechanisms, Diagnosis of fungal infections, Treatment of fungal infections

Unit 4

Infections by Staphylococcus and Streptococcus, Staphylococcus – structure, classification, natural habitat, epidemiology, pathogenesis, clinical manifestations, Diagnosis, Treatment, antibiotic resistance, control

Infections caused by Bacillus Anthracis

Infections caused by Psuedomonas

Infections caused by Anaerobic Gram-negative bacilli

Infections caused by Chlamydia

BPA205 Subject – 5 Obstetrics and Gynaecology

Unit 1

Bony pelvis – important land marks of obstetrics significance, fetal skull
Physiological changes in pregnancy / menopause
Conception, abortions , gestational trophoblastic diseases
Vulva – cyst, inflammation, neoplasia , dystrophy
Vagina – cytology, infection, inflammation, neoplasia
Uterus –endometriosis, adenomyosis , hyperplasia, atrophy, carcinoma
Cervix – erosion, infections, malignancy
Infections – STD, genital TB, HIV, TORCH, vertical transmission of HIV

Unit 2

Obstetrics- Diagnosis of pregnancy, antenatal care and fetal surveillance, first trimester bleeding, normal and abnormal presentations and positions, dystocia due to bony pelvis, soft tissue, high risk pregnancies, IUGR, IUD, preterm labour, premature rupture of membranes, poly and oligohydramnios, post dated delivery, Prolonged labour, obstructed labour, rupture uterus, previous LSCS, third trimester bleeding , preeclampsia and eclampsia , medical disorders complicating pregnancy, surgical emergencies in obstetrics, Rh iso immunization, partogram, ultra sound in obstetrics, fetal monitoring , active management of labour, neonatal resuscitation, analgesia and anaesthesia in obstetrics, instrumental deliveries, LSCS, third stage complications, normal and abnormal puerperium , morbidity and mortality, medical auditing in obstetrics.

Unit 3

Gynecology: - Maldevelopment, injuries, infections, cysts , tumors of female genital tract.
Vulva – inflammation, ulcers, atrophy, dystrophies, cysts, neoplasm
Vagina – leucorrhoea, infections, carcinoma
Cervix – erosion, ulcer, dysplasia, carcinoma
Uterus – prolapse, displacements (inversion and retroversion), endometriosis
abnormal uterine bleeding / post menopausal bleeding, endometrial hyperplasia, benign and malignant tumours.
Primary and secondary amenorrhoea, infertility, PCOD, assisted reproductive techniques, choriocarcinoma

Unit 4

Urinary system – Stress incontinence, pelvic pain, low back ache
Cancer screening for genital malignancy and breast / Pap smear
Radiotherapy outline and chemotherapy
Neonatology: - Neonatal resuscitation, meconium aspiration syndrome, preterm care, RDS, neonatal jaundice, congenital anomalies, birth injuries.

Second year – Second Semester (IV semester)

6. **General Pharmacology – II**
7. **Hospital infection control practices**
8. **Geriatrics**
9. **Cardiology and Cardiac surgery**
10. **Pulmonology**

BPA206 Subject – 6 General Pharmacology II

Unit 1

Chemotherapy : Antibiotics, Anti fungals and Anti virals

Antibiotics – Antibacterial agents, Classification of anti bacterial agents, Description of commonly used antibacterials

Anti fungal drugs – classification of anti fungal agents, description of commonly used anti fungal drugs

Anti viral drugs – classification, description of commonly used anti virals

Unit 2

General and Local Anaesthetics – Mode of action, classification of local anaesthetics, drugs for local anaesthetics, adverse effects, General Anaesthetics, adverse effects

Sedatives and Hypnotics – Brief introduction - Classification – Barbiturates, Benzodiazepines

Unit 3

Drugs affecting the Endocrine system

Introduction – Endocrine system – Thyroid hormones – Anti-thyroid drugs
Insulin and Diabetes Mellitus – drugs used in Diabetes Mellitus
Growth hormone, Prolactin, Gonadotropins

BPA207 Subject -7 Hospital Infection Control practices

To include syllabus on

1. Best practices in sterilization of OT, OPD, cafeteria, common areas
2. Nosocomial infections and their awareness
3. Biomedical waste management
4. Statutory regulations in HIC

BPA208 Subject – 8 Geriatrics

Unit 1

Geriatrics – physiological and psychological fundamentals of aging process

Diet for the aged and management of nutritional disorders

Disorders of major geriatric ailments and management – Medical – infections, dehydration, acute confusional state, osteoporosis

Unit 2

Degeneratiive joint diseases, effects of immobility – prevention of contracture and bed sores

Economic, psychosocial needs of the aged.

Role of various health care providers including family

BPA209 Subject 9 Cardiology and Cardiac Surgery

Unit 1

Basics – structural basis of cardiovascular disease, embryology, chambers, heart valves, surface marking, great vessels, blood, cardiovascular disease, cardiac cycle, heart sounds, circulation of blood , cardiovascular responses to exercise, heart failure and compensatory mechanism, cardiac muscle action , coronary perfusion.

Unit 2

Cardiovascular diseases – symptoms and signs, pulse, BP, JVP
Congenital heart disease – cyanotic and acyanotic heart diseases
Hypertension- essential, malignant, systemic and pulmonary hypertensions
Arterial diseases – atherosclerosis – risk factors, Burger's disease
Coronary, Rheumatic heart disease, heart failure, cardiac arrhythmias, cardio myopathies
Peripheral vascular disease, pulmonary thromboembolism,
Systemic diseases affecting the heart, pregnancy and heart disease
Pericardial diseases, Cardiac trauma, tumors of heart

Unit 3

Prevention of heart diseases –Diagnostic tools – ECG, Chest X-ray, ECHO, TMT, Holter,
24 hour ambulatory BP monitoring, blood analysis., etc.
Cardiac catheterization and coronary angiography- preparation of patient physically and mentally. Pre and post-operative care and rehabilitation programme. PPI
Importance of life style modification measures.

Unit 4

Cardiac surgery ;- Basics – Cardiopulmonary bypass – closed and open heart operation, PDA ligation, closed mitral valvotomy, pulmonary artery banding , block trussing shunt, pericardiectomy, shunt operations, ASD and VSD closure, Tetralogy of Fallot correction, valvular disease surgeries, surgery for transpositions, other corrective surgeries and coronary surgeries.

BPA210 Subject – 10 Pulmonology

Unit 1

Upper airway diseases- basic respiratory mechanics, causes and pathophysiology of hypoxia and hypercapnia.
Respiratory failure –acute, chronic mechanism and management
Allergy and bronchial asthma, chronic obstructive lung diseases
Restrictive / interstitial lung diseases, pulmonary tuberculosis, occupational lung diseases

Unit 2

Lung cancer – Primary and secondary, haemoptysis , pneumonia.
Pleural diseases –Pneumothorax, Pleural effusion
Cardiogenic and non-cardiogenic pulmonary oedema
Diseases of the Diaphragm and the chest wall

Third year – First Semester (V semester)

1. **Neurology**
2. **Nephrology**
3. **Orthopaedics**
4. **Gastro-enterology**

BPA301 Subject 1 Neurology

Unit 1

Nervous system – basics – neurotransmitters- general principles and common transmitters
Cell membrane – physicochemical properties, permeability and transport, bioelectricity,
Genesis of resting membrane potential, action potential, properties of nerve-fibres.
Neuromuscular junction
Muscle proteins, excitation – contraction coupling, injury and repair of nerves and muscles, work physiology.

Unit 2

Sensory system –Functional organization of sensory system, perception of sensory stimuli, coding, physiology of pain.
Motor System – Functional organization of motor system, properties of reflexes, brain stem ,stretch , tendon reflexes, basal ganglia cerebellum and vestibular neck reflexes , maintenance of equilibrium, localizing the level of lesion in neurological diseases

Visceral and motivational system – autonomic nervous system, hypothalamus , limbic system, emotions, EEG , sleep and wakefulness, learning , memory and speech.

Unit 3

Neuropathology – Trauma
Inflammatory disorders- pyogenic and tuberculous meningitis, brain abscess, tuberculoma
CSF and its disturbances – cerebral odema, raised intracranial pressure
Cerebrovascular disease – atherosclerosis, thrombosis, embolism, aneurysm, hypoxia,
infarction and haemorrhage.

Unit 4

Neurological diseases: - Clinical examination of nervous system, investigations
Major manifestations – headache, facial pain, raised intracranial tension, faintness, dizziness, syncope, vertigo
Disorders of sleep and movement
Sensory disturbances (numbness, tingling and sensory loss), acute confusional state, coma and brain death,
Aphasia and focal cerebral disorders, disturbances of brain stem, vision and sphincter.
Headaches – migraine, cluster and seizures
Cerebrovascular disease - Dementia, meningitis, encephalitis , cranial nerve diseases, spinal cord diseases , tumours (primary and secondary), Peripheral neuropathies and demyelinating disorders , multiple sclerosis , Parkinson's disease, extrapyramidal disorders, cerebellar disorders.
Motor neuron disease, diseases of muscles, neurological manifestations of systemic diseases, nutritional and metabolic diseases of the nervous system.

BPA302 Subject 2 : Nephrology

Unit 1

Genito- urinary system – basics, innervations of urinary bladder in detail, microscopic structure of the kidney, Juxtaglomerular apparatus, microcirculation of kidney, histopathology of kidney, ureters, urinary bladder and urethra.
Renal haemodynamics and glomerular filtration- renal function, renal function tests, micturition

Unit 2

Urinary tract pathology- basis of impaired renal function, urine analysis. Glomerulonephritis – classification – primary (proliferative and non-proliferative) Secondary glomerulonephritis – (SLE, purpura, polyarteritis, amyloidosis, diabetes, nephritic syndrome)
Acute renal failure, progressive renal failure and end stage renal disease
Pyelonephritis , reflux nephropathy, interstitial nephritis
Renal and genitourinary tract tumours – renal cell carcinoma and nephroblastoma
Renal vascular disorders, kidney changes in hypertension
Urinary bladder – cystitis, carcinoma, urinary tract tuberculosis, urolithiasis and ostructive uropathy
Congenital abnormalities of kidneys and urinary system

Unit 3

Clinical examination of kidney and genitourinary system- symptoms, signs and investigations.
Major manifestations – dysuria, pyuria, urethral symptoms
Disorders of urine volume, haematuria , proteinuria, oedema,
Obstruction of urinary tract, incontinence, renal involvement in systemic disorders
Drugs and kidney, renal replacement therapy

BPA303 Subject 3 Orthopaedics

Unit 1

Ortho: - basics, ossification of bones of the limbs for age determination, X-rays of bones, process of repair of bone. Infections – osteomyelitis, tuberculosis, mycetoma.
Metabolic diseases – rickets /osteomalacia, osteoporosis, hyperparathyroidism
Tumours- Primary – Osteosarcoma, Osteoclastoma, Ewing's sarcoma, chondrosarcoma and Secondary tumors Arthritis – Rheumatoid, osteo arthritis/ ankylosing spondylitis.

Unit 2

Fracture – definition, classification, management, fracture healing, delayed union, open fractures, management of fracture clavicle, shaft of humerus and dislocation of shoulder.
Classification of injuries around the elbow and management of supracondylar fracture and dislocation of elbow, Monteggia fracture dislocation and fracture of both bones of forearm, Volkamann's ischemic contracture, fracture lower end of radius, scaphoid and metacarpal fracture.

Fracture of pelvis and dislocation of hip, fracture neck of femur, trochanter, shaft of femur tibia, fibula and metatarsal.

Unit 3

Internal derangements of knee, injuries of ankle and foot, amputations,
Congenital malformations – CTEV, torticollis , CDH, pseudoarthrosis Disorders of hip- Coxa vara, Perthes disease. Deformities and disorders of the spine
Blood transfusion

BPA304 Subject 4 Gastro-Enterology

Unit 1

Clinical gastroenterology – Basics, functions and physiology of defecation
Preventive gastroenterology- obesity, GI disorders, constipation, diarrhea and dysentery

Unit 2

Surgical asepsis and hygenic endoscopy room – preparation of sterile field – preparation of tables, equipments, instruments for the procedure, giving oral anaesthetic agent, transfer and positioning of the patient, care of the room before, during and after the endoscopy procedure, special precautions in handling patients with sepsis, blood borne infection – Hepatitis B, HCV, HIV etc, cleaning and disinfection , terminal disinfection

Basic endoscopy unit – forward viewing, single channel and double channel endoscopy and specific instruments used in endoscopic and colonoscopic procedures.

Third year – Second semester (VI semester)

Clinical postings on Rotational basis in Single / Multi speciality hospital

****Please note that Text books and Reference book list to be included for all courses**